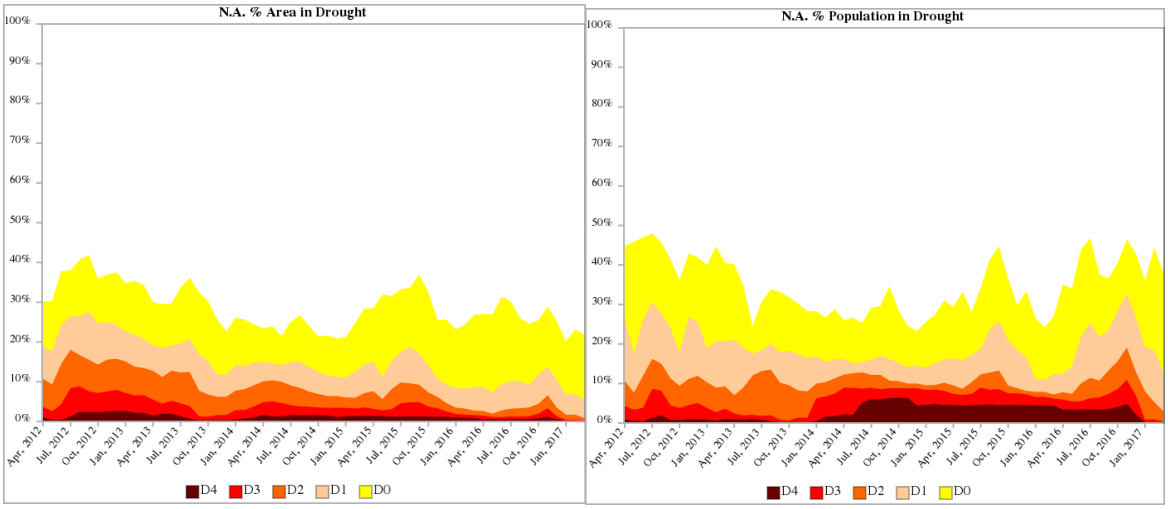
North American Drought Monitor – March 2017

At the end of March 2017, moderate to exceptional drought (D1-D4) affected approximately 5.3% of the area and 12.7% of the population of North America. The percent area value was 1.4% less than the value for the end of February 2017, and the percent population value was 5.6% less than the value for the end of February.



CANADA: Throughout March, precipitation in eastern Canada continued to improve drought and moisture deficits, while portions of western Canada—specificity Alberta and northern British Columbia—faced persistent drought concerns. A vast majority of the country was slightly cooler than average during the month, resulting in more precipitation in the form of snow. Moderate drought persisted in northwestern British Columbia and in small parts of southeastern Ontario and southwestern Nova Scotia due to long-term precipitation deficits. Short-term deficits have developed in Alberta, leading to small regions of drought and increased concern about a lack of soil moisture heading into spring.

Western: Similar to the previous month's assessment, drought conditions in British Columbia were confined to the northern half of the province, with the addition of Haida Gwaii. Poor snow cover at low elevations affected central B.C., causing concerns over soil moisture conditions. Hence, the Abnormally Dry (D0) pocket in northern B.C. was expanded south to include Prince George and Quesnel. Snow pillow data showed that several regions in the north continued to experience record-low snow accumulations this winter, and the Moderate Drought (D1) in this region has been expanded to reflect this. Precipitation indices showed significantly dry conditions on Haida Gwaii since fall; thus, a D1 pocket was added.

Precipitation across the Prairie Region was variable in March. Conditions in Alberta continued to deteriorate, with much of the province receiving less than 50 percent of average precipitation since January. This region went into the winter with adequate soil moisture; however, well-below-average winter snowfall and above-normal temperatures have increased evaporation and left this region dry and vulnerable. As a result, the Abnormally Dry (D0) pocket was expanded to include northern Alberta and an area

between Calgary and Lethbridge. A small region west of Lethbridge had an extremely dry month. Although the area surrounding Brooks saw improvement in the past couple of months, helping to diminish drought concerns, the lack of winter snow remained a potential issue this spring. South-central Saskatchewan had extremely low precipitation in March, contributing to the increasingly low snowpack. However, spring moisture concerns remained neutral due to good soil saturation at the time of freezing. By the end of the month, most of the snow in the prairie region had melted and some localized stream flooding occurred.

Central: The Central Region continued to see improvements throughout March. Southern Ontario experienced an above-average precipitation event toward the end of the month, which resulted in the elimination of several Abnormally Dry (D0) pockets in the region. The remaining Moderate Drought (D1) pocket in southern Ontario was due to long-term deficits. Precipitation analysis indicated that eastern Ontario and western Québec have had a very dry winter. Three D1 pockets persist in the areas surrounding North Bay and Englehart in Ontario and Lac-Loïs in Québec. Long-term Abnormally Dry (D0) conditions in northeastern Quebec also persisted through March.

Atlantic: Conditions in Atlantic Canada remained relatively unchanged throughout March. Above-average precipitation in southern New Brunswick led to the continued shrinking of the Abnormally Dry (D0) pocket in this region. The D0 pocket in southern Nova Scotia grew as a result of a winter precipitation deficit, and long-term Moderate Drought (D1) remained in a tiny pocket of southwestern Nova Scotia. The D0 pockets in Labrador have also persisted due to continued precipitation deficits.

Northern: Conditions in Northern Canada remained relatively unchanged throughout March. An Abnormally Dry (D0) pocket continued to envelop southern Yukon Territory, with moisture concerns in the area surrounding Tuchitua. Satellite-derived data showed improvement in southwestern Northwest Territories; thus this area returned to normal conditions this month.

UNITED STATES: Early-March wildfires on the central and southern Plains and mid-month freezes in the Southeast highlighted an active weather pattern. The Southeastern cold snap, which caused extensive fruit (e.g. peach, blueberry) losses in Georgia, South Carolina, and portions of neighboring states, peaked from March 15-17, immediately in the wake of a Northeastern blizzard. From March 13-15, wind, rain, sleet, and snow caused extensive disruptions from the Mid-Atlantic States to New England.

In contrast, drier-than-normal March weather dominated the nation's southern tier, from southern California to the southern Atlantic States, except in parts of southern Texas. The dry weather promoted a rapid fieldwork pace, allowing planting of corn and other summer crops to quickly proceed. However, in areas experiencing drought, such as parts of the Southeast, dry weather, mid-month freezes, and periods of unusual warmth resulted in declining crop and pasture conditions.

Meanwhile, beneficial precipitation fell across the central and southern Plains, reviving rangeland, pastures, and winter wheat that had been experiencing drought stress. However, the rain arrived in the wake of wildfires that charred large tracts of grassland, along with fences and other farm infrastructure, in eastern Colorado, western Kansas, western Oklahoma, and northern Texas.

Similarly, increasingly showery weather in the central and eastern Corn Belt boosted soil moisture but ultimately slowed pre-planting fieldwork. However, most of the precipitation bypassed the upper Midwest.

Elsewhere, California experienced a break from heavy precipitation, as the primary storm track shifted across the Northwest. Late in the month, however, rain showers and high-elevation snow returned to northern California.

Persistently cold March weather was limited to the Northeast, although other parts of the northern and eastern U.S. experienced some sharp cold waves. In contrast, significantly above-normal temperatures stretched from the Southwest and Intermountain West to the central and southern Plains and the mid-South.

Contiguous U.S. drought (D1 or worse) coverage dipped to 9.83% by April 4—the first time less than one-tenth of the country was in drought since September 7, 2010. Similarly, U.S. coverage of extreme to exceptional drought (D3 to D4) dipped to 0.10% of the Lower 48 States on April 4, lowest such area since May 18, 2010. There has not been any D4 in the United States since January 17, 2017. Meanwhile, California's drought situation continued to improve, with only 8.24% of the state in drought by April 4. Nearly three-quarters (73.04%) of California was in drought as recently as December 13, 2016, and all of the state was stricken by drought during much of 2014.

By April 4, the nation's only lingering extreme drought (D3) stretched across northern Georgia and upstate South Carolina. Georgia's D3 covered just over 4% of the state, while South Carolina's D3 coverage was just over 2%. Florida's peninsula was experiencing some of the worst drought in the nation, with statewide coverage of severe drought (D2) topping 13% by April 4.

Outside of the contiguous U.S., heavy showers in Puerto Rico eradicated abnormal dryness (D0), which had covered more than 46% of the commonwealth in early to mid-March. Meanwhile, Alaska's coverage of D0 remained steady near 31% in March and early April. Farther south, a drier-than-normal month in Hawaii led to an increase in drought coverage from roughly 7 to 26%--and resulted in the state's largest coverage of severe drought (D2)—nearly 18%--since June 2016.

Historical Perspective: According to preliminary information provided by the National Centers for Environmental Information, the contiguous U.S. experienced its ninth-warmest, 51st-wettest March during the 1895-2017 period of record. The nation's average temperature of 46.2°F (7.9°C) was 4.7°F (2.6°F) above the 1901-2000 mean, while precipitation averaged 2.56 inches—102 percent of normal. Early-spring warmth has been very common in recent decades, with twelve years (1986, 1990, 1992, 1994, 1997, 2000,

2004, 2007, 2012, and 2015-17) appearing in the top-25 list for March average temperatures, based on 123 years of data.

State temperature rankings ranged from the 21st-coldest March in Maine to the warmest-ever March in Colorado and New Mexico. Previous records for March warmth in Colorado and New Mexico had been set in 1910. Joining those two states in reporting top-ten values for March warmth were Arizona, Idaho, Louisiana, Nevada, Oklahoma, Texas, Utah, and Wyoming. Meanwhile, state precipitation rankings ranged from the ninth-driest March in Florida to the second-wettest March in Washington. Elsewhere in the Northwest, Idaho and Oregon noted top-ten values for March wetness.

Agricultural and Hydrological Highlights: By April 4, just 10% of the U.S. winter wheat production area was in drought, down from 26% just 2 weeks earlier. Similar declines in drought coverage were noted between March 21 and April 4 with regard to U.S. hay production area (from 23 to 13%) and U.S. cattle inventory (from 23 to 12%).

Drought effects on winter wheat began to subside as rainfall coverage and intensity increased in late March. According to the U.S. Department of Agriculture, Colorado led the 18 major winter wheat production states on April 2, with 26% of the crop rated in very poor to poor condition. In addition, winter wheat was rated 20% very poor to poor in Kansas, along with 17% in Oklahoma and Texas. Nationally, 14% of the U.S. winter wheat was rated very poor to poor on April 2, seven percentage points higher than the previous year.

On April 1, 2017, reservoir storage as a percent of average for the date was near or above average in all Western States except New Mexico and Washington. New Mexico's low storage was a combination of several factors, including the lingering effects of a multi-decadal drought and overtaxed water supplies. Hydrologically, Washington has fewer concerns, and in fact continued to prepare for robust spring and summer runoff by keeping some reservoirs low. Meanwhile, California's April 1 statewide storage stood at 113% of average, down from 122% a month earlier, as reservoir managers released water to prepare for the tremendous inflow that will accompany snow-melt runoff during the spring and summer months.

MÉXICO: Above-normal rainfall occurred over the Gulf of Mexico from Tamaulipas to southern Veracruz and Tabasco in March 2017. The main weather systems that brought these rains were low-pressure channels, trough lines, dry lines, and cold fronts; the rest of the country received normal to below-normal precipitation. The monthly average precipitation of 14.0 mm at the national level was 89.3% of normal and resulted in the 32nd-wettest March, based on records since 1941.

In those regions receiving significant precipitation, Veracruz was notable because monthly rainfall was nearly double the normal—60.8 mm, compared with an average of 33.4 mm—resulting in the seventh-wettest March. Morelos and Zacatecas achieved their eighth-wettest March, and Nuevo Leon and Tamaulipas their tenth-wettest March. Over the northwest and southeast, rains were deficient; thus, Baja California had its seventh-driest

March; Sonora and Yucatán their eighth-driest March; and Chiapas their tenth-driest March.

Due to the aforementioned lack of rainfall, drought areas remained in central highlands, the western and southern parts of the country, as well as in the Yucatan Peninsula. The moderate to extreme drought (D1-D3) area remained at 9.71% of the country, 0.27 percentage point less than the February 28 assessment. Meanwhile, 64.76% of the country was not experiencing any drought or dryness. To cope with the extreme drought (D3) in the Isthmus of Tehuantepec, Oaxaca and the federal and state governments have joined efforts, channeling around 240 million pesos to provide drinking water for communities of that region and 105 million pesos to the hydrological sector. Other actions included the rehabilitation and maintenance of 300 wells for irrigation, mainly of fodder, and for the rehabilitation of watering points for livestock. Authorization was also granted for the drilling of deep wells and rehabilitation of infiltration centers, in order to supply water to more than 640,000 inhabitants of the region. At the same time, 25 tanker trucks were dispatched to bring water to municipalities with poor infrastructure. The drought has impacted mainly agricultural activities and the provision of clean drinking water in urban and rural areas. In that region, primary crop losses included corn, sorghum and sesame, in addition to serious effects on the livestock.

Above-normal temperatures were recorded in most of the country in March. Greatest departures (more than 5.0°C above normal) covered the Baja California-Sonora border, most of Chihuahua, western Durango, the Coahuila-Nuevo Leon border, and to a lesser extent Oaxaca and Chiapas. The mean temperature of 21.3°C was 1.7°C above average (1981-2010) and was classified as the warmest March on record during from 1971-2017. It was also the warmest March for Aguascalientes, Colima, Nayarit, Sinaloa, and Sonora. Another fourteen states were in the top five for their warmest March.

From January 1 – March 30, the states with the greatest area burned by forest fires were Oaxaca, Jalisco, Guerrero, Puebla, Chiapas, and Yucatan, which together accounted for 66.6% of the national area burned. Oaxaca was the most affected state, with 16,630 hectares burned, 28.3% of the national total. Compared with other years, the period from January 1 – March 30, 2017, was ranked as the fifth-highest area burned, according to the weekly report of fires from the National Forestry Commission (CONAFOR). In the agricultural sector, the Information System of Agri-Food and fisheries (SIAP) reported that in the first 3 months of the year, 3.6 million hectares mainly of corn, sorghum and wheat were planted, which represents a decrease of 3.1% compared to the same period last year. Production of the perennial crops of sugarcane, alfalfa and oranges accounted for 93% of the total amount of perennial plants. There were reported production increases in bovine milk by 2.0%, as well as bovine meat (2.1%), pork (4.2%), chicken meat (3.2%), and eggs (4.0%).